

**A Health
and
Temperance
Manual**

**WITH
TEACHING
NOTES**

**THE YOUTH TEMPERANCE EDUCATIONAL
COUNCIL and BAND of HOPE UNION, N.S.W.
COUNCIL**

Robert Henshaw

A

Health and Temperance Manual

WITH TEACHING NOTES

Compiled for

**The Youth Temperance Education Council and
Band of Hope Union, N.S.W.**

By V. E. STANTON

with

FOREWORDS

by

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TO
ALL FOND PARENTS
who cherish for those whom God
has given them, soundness of
health and nobility of life, and,
in particular,

TO
MY OWN MOTHER
and the memory of
A DEVOTED FATHER

FOREWORDS

By Professor HARVEY SUTTON, M.B., B.Sc.,
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The credit in the past for the introduction of health teaching into the schools must be given to the Health and Temperance Movement. Its pioneers appreciated to the full the magnitude of the drink evil and the blind social customs and prejudices that form its main support.

With true prophetic vision they saw that the chief hope for social and racial betterment lay in the teaching of the young people, the coming generation. They believed, and rightly, that in the long run truth will always conquer, and so they set about collecting unvarnished facts as to the influence of alcohol on the human body and the body politic alike. Obviously to demonstrate clearly the sinister effects of this substance, at once food, drug and poison, on the human body and mind, it became an essential preliminary to give an elementary scientific knowledge of the bodily machine, how it is built, how it works, how it should be cared for: in other words, the knowledge of physiology (normal function) and hygiene (the laws of health).

The early teaching laid, perhaps, too great a stress on livid pictures of morbid effects and on the negative aspect and the need for prohibition. But as soon as their efforts prospered and progressed they realised the still greater force of positive ideals of health. The

human being, young or old, prefers to be guided as to what to do rather than repressed and told only what not to do. The success of their efforts is undoubted. Drunkenness is no longer regarded as an amusement or pastime, but as a disaster or nuisance, no longer to be laughed at but to be pitied or to be penalised.

Step by step the cold light of science has exploded the pretensions of alcohol. The medical scientist no longer regards alcohol as a stimulant, but as a narcotic, the hospital physician has abolished it from diet lists and only uses it occasionally as a drug. It has now been abandoned by the Authorities in first aid and in athletics. No longer is it recommended for nursing mothers, while the physiologist has exposed the fallacy that it keeps out the cold.

Its undoubted and attractive power to provide oblivion has been shown to be purchased at too great a price. While in social functions it still has many supporters among men, more and more as a community we find that the finest appreciation of pleasure and the genuine enjoyment of the good things of life are not the gift of alcohol, but rather that the partial doping it produces merely dulls and deludes the mind.

In professional life sobriety is the rule. Woe to the success of the dentist or doctor or surgeon whose breath betrays an alcoholic habit to his patients, while our magistrates nowadays display a haughty attitude to the motorist whose convivial drinking, by slackening his controls, has made him a danger to traffic or to the pedestrian.

From the social point of view we may well judge alcohol by its associates. Time and time again at the Courts or in social problems we meet with the vicious circle of alcoholism, poverty, vice, crime and disease. Alcohol may not always be the essential cause of these social failures, but undoubtedly it always accelerates their progress and intensifies the damage they do to the individual and to the public.

The aim of this book is to create health by the teaching of simple, sound, scientific statements on the fundamental needs of the growing child, and by transmitting modern and accurate information as to the truth about this supreme racial poison, alcohol.

The book should have the best wishes of everyone who believes in safeguarding the future of young Australia.

HARVEY SUTTON.

The University, Sydney.

By Dr. A. E. MACHIN (M.B., Sydney),
Ex-Principal Medical Officer, New South Wales
Department of Education

The necessity for instructing children in the elementary principles of hygienic living is, year by year, becoming more widely recognised. This little manual deals with the subjects of health and temperance in an elementary manner suitable for the young scholar. There has been a distinct need for a work of this kind for use in schools in New South Wales, and by societies and organisations interested in the welfare of the young.

Several chapters are devoted to temperance, and the contents of these should have a valuable educational influence. The harmful effects of alcohol on the system and the general evils of intemperance are fully explained.

A fairly wide range of the subject of hygiene has been covered, the information given being brief, but of the greatest practical value.

The manual should prove to be useful and informative to teacher and scholar alike.

A. E. MACHIN, M.B.

Sydney.

PREFACE

This manual has been prepared primarily for imparting to young people instruction in Hygiene, Temperance, and Elementary First Aid, and has been critically examined by competent authorities.

Its contents, though obviously condensed, are comprehensive, and are based upon and cover completely the course in these subjects laid down by the Department of Education of New South Wales in its curriculum for the higher classes in primary schools. It may, therefore, serve as a text-book for entrants in the Health and Temperance Knowledge Tests, conducted annually in the schools, under the auspices of the Department, in association with the Youth Temperance Educational Council and Band of Hope Union, N.S.W.

It is hoped that the manual will be found useful, also, as a preliminary course for young people's clubs and societies, having among their objects the teaching of Temperance and wholesome living.

Simplicity of language, and the presentation of the facts in a form easily understood by young students, have been the dominant considerations in preparing the publication; and, in arranging the matter, the needs of the busy teacher, and the possibility of the book being used as a reader, have been kept constantly in mind.

Teaching notes and suggested experiments have been added at the end of each chapter, to aid in emphasising the lessons, and in making them more interesting. It is left to the instructor, from his or her own knowledge, to enlarge upon or support the information given.

V.E.S.

This booklet has been revised by a Joint Committee of the Department of Education, N.S.W., and the Youth Temperance Educational Council and Band of Hope Union, and is approved by the Department of Education for use in Schools

Sydney

Jan., 1957

BOOKS OF REFERENCE

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M.D. (of Labrador). Hodder & Stoughton.)
- “Physical Fitness,” Parts I., II., and III., by Chas.
Harvey. (Union Publishing House, London.)
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St. John Ambulance Association, Publishers.
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Red Cross Headquarters.
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For other works of reference, see the footnotes of the sections on Hygiene, in the latter course.

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A Health and Temperance Manual

CHAPTER I.

WHAT IS MEANT BY "HEALTH AND TEMPERANCE"

1. The **"House we live in,"** the human body, is the most wonderful thing in the world. It is, in fact, as the great St. Paul has said, the very "temple of God"! Surely, then, it is most important to know how to take care of it.

This little book has been written to teach young people the simple rules of health that will help them to keep this "living temple" clean and strong and beautiful.

2. When every part of the body is working properly, the body is said to be in a state of good health. When any part is not working properly, the body is said to be in a state of ill-health.

3. **There are many causes of ill-health.** Here are some of them:

Not enough fresh air to supply the red blood cells with oxygen.

Not washing our bodies often enough to keep the skin clean.

Allowing tiny disease germs to get into the body with the breath, or through a sore, or with our foods.

Not having enough food or drink, or taking too much of either.

Eating and drinking things that are not wholesome and that clog up the body, or poison it by hurting some of the organs or tissues and the little cells of which they are made.

4. **The study of these rules of health habits is nowadays called Hygiene.** They have to do not only with eating and drinking and our personal cleanliness, but also with the health and cleanliness of our homes, our towns, and of the people as a whole.

Because of Research, Health Services, and a better understanding of the laws of health we can expect to live much longer.

An Englishman born in 1845 could expect to live 45 years. If born in 1921 he could expect to live 55 years.

An Australian man born in 1885 could expect to live 53 years and a woman could expect to live 56 years.

However, an Australian man born in 1955 can

expect to live 68 years whilst a woman can expect to live 73 years.

5. Temperance, or self-control, has much to do with good health. We cannot learn too early to control our appetites and our desires—excesses in eating or drinking, in effort of body or mind, or, in fact, excess in anything we do, is always harmful to our bodies. We must learn, too, that there are some things from which we should abstain altogether, if we wish to maintain physical and mental fitness. As we find out what is best for our bodies, our ambition should be so to master our appetites and conduct, that it will become easy for us to resist the temptation to over-indulge. In this practice of self-control or self-discipline we find the true meaning of Temperance.

6. A good definition of Temperance is: Moderation in all things good, and abstinence from all things bad.

1. Make comparisons between a temple and the human body—neither is attractive if not clean—strong—beautiful.

Familiarise scholars with the word Hygiene (healthy, wholesome), and the causes of ill-health, as described.

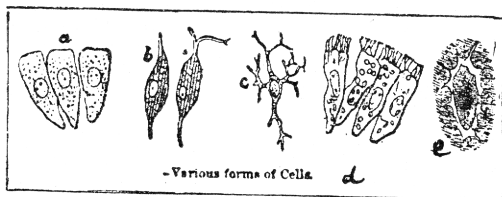
Memorise the definition of Temperance.

CHAPTER II.

OUR WONDERFUL BODIES

1. **Why we should learn about the body.** Just briefly let us first of all study the structure of this marvellous body of ours. Although only doctors understand fully how every part of the body works, everyone should at least know the uses or functions of the main organs and parts. Such knowledge will help us to understand more fully the need for Hygiene and Temperance, and what to do to keep healthy.

2. **The body may be divided into three sections:** the head, the trunk, the limbs. These are composed of skin, bones, muscles, nerves, blood, fat, and other kinds of tissue that act as connecting fibres, linings, glands, and organs, which assist in maintaining life and health and strength.



3. **Every part of the body, including the blood, is made up of millions of tiny cells.** If an orange is cut in two, hundreds of cells may be seen in each half. The cells of the body are something like these, but ever

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so much smaller. Most of them are smaller than grains of sand—even finer than chalk dust!

4. **Each part of the body has differently shaped cells.** Muscle cells, for instance, are like tiny striped threads, and brain cells are star-shaped; and each little healthy cell is alive and needs food, water and air.

5. **The bones** form the framework or skeleton around or within which all the other parts are built. They help to stiffen the limbs and trunk, and to them are attached many of the muscles; so that, when the muscles pull or contract, the limbs, head, trunk, or jaws, as the case may be, will move when required to do so.

The bones will bend and give when we are babies, but they become gradually more brittle the older we grow.

6. **The muscles** form the flesh of the body, and are like the red part of the meat sold in the butcher's shop. Their work is to pull when they receive a message through the nerves, and thus they cause all the movements of the body. Muscles are really bundles of fibres bound together in covers or sheaths. Each fibre or muscle cell can contract (thicken and shorten) just as stretched elastic will do. When the hundreds of cells (striped threads) in any set of muscles contract, they make the muscle shorter, thus causing movements.

7. **The nerves** are the silvery telephone wires that convey the messages between the brain and the muscles, the skin, the organs, and other tissues of the body.

They also carry messages to and from the little sub-stations along the spine and in other parts where the main cables from the brain are to be found. These nerve-wires are finer than spider's web, and their ends are so numerous and close together under the skin and in many other places, that not even the point of a



MUSCLES

Showing: Bundle of Muscle Fibres—Muscle drawn up (contracted), and relaxed.

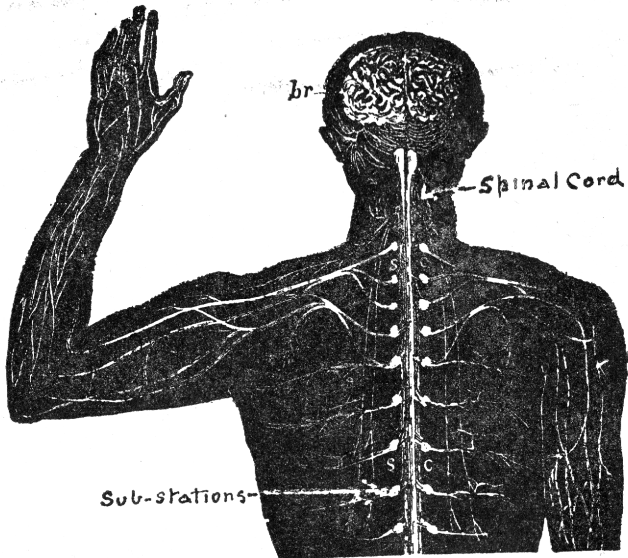
needle can prick any part without touching some of them.

8. The touch or feeling nerve-ends are there to flash messages to the brain when we feel anything (sharp or blunt, hot or cold, round or flat), and to warn us when any part is being hurt. Other nerves carry messages from the brain, or the sub-stations, to the muscles and organs throughout the body.

9. **The brain** is the most wonderful part of all the body, and even learned doctors have still to find out

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much about it. It is the headquarters or office that controls all our thoughts and actions, and keeps records of what we see, hear and do. In the spinal cord



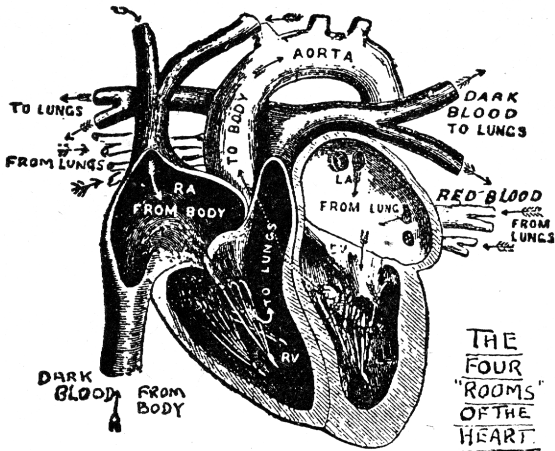
THE BRAIN AND NERVOUS SYSTEM
Note the "substations" along the spinal cord.

which runs through the backbone is a marvellous telephone exchange, which receives the messages from both body and brain, and instantly switches them over, hundreds at a time, to where they should go.

10. A boy kicks his toe against the bed post. Like a flash, touch nerves carry warning messages to the exchange. The exchange instantly sends out calls to parts of the brain that control the foot, leg, body, arm,

voice, and face. He jumps, bends, holds his toe, yells, and screws up his face, all in a fraction of a second. Hundreds of messages were sent, sorted and received in that moment!

11. **The heart** is the busy little pump that keeps the blood flowing through the arteries and veins. It has four rooms—two upstairs and two downstairs. First the blood is drawn into the top right room from the big main vein; then down it goes through a trap door (or valve) into the right room below. The heart muscles give a squeeze and send the lower roomful out along a pipe to the lungs for fresh air. Presently, back comes



THE HEART
Showing the four "rooms," and how the blood circulates through them

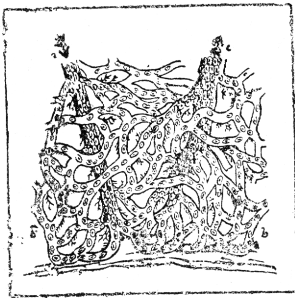
the blood into the top left room, then down through another trap door (or valve) to the lower left room. With the next squeeze of the muscles, out goes the blood into the big main artery, and through the smaller

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and yet smaller arteries until it reaches the tissues.

As long as we live, whether we are asleep or awake, this busy little pump keeps at its task of circulating the blood.

12. **The arteries and veins.** The arteries are the tough rubber-like tubes which convey the bright red oxygen-laden blood from the lungs and heart to the tissues all over the body. The veins are the tubes which convey the duller, dark-red blood, laden with gases from burnt up tissues and foods, back to the heart and lungs.

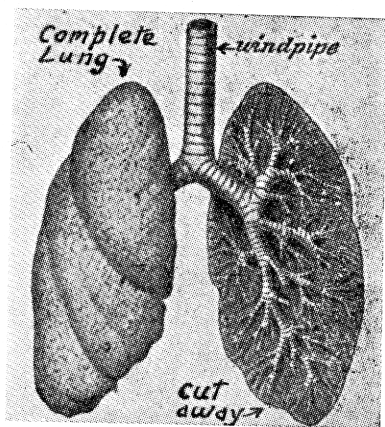


BLOOD CELLS (CORPUSCLES)
PASSING THROUGH CAPIL-
LARIES, AS SEEN THROUGH
A MICROSCOPE

13. **The capillaries** are the tiny blood tubes running through the tissues where the arteries end and the veins begin. They are finer than the hair of the head, have very thin walls, and, like the nerves, are packed so closely together that even a needle point cannot be pushed into the skin or other tissue without breaking some of them.

14. **The blood** which appears to be red is really a clear watery fluid crowded with hundreds of millions of tiny flat round red cells. It is these cells that make the blood red, and their work is to carry fresh oxygen

from the air in the lungs to the tissues of the body, and to carry away from the tissues impure gases to be breathed out from the lungs. In the blood stream there are millions of white cells also, which can change to any shape. Their work is to fight off disease. They are the "policemen" or "soldiers" of the body. The blood, which has been well named "the river of life," also conveys water and food from the digestive organs to and from the tissues, and washes out and carries away impurities that would become poisons if they remained.



THE LUNGS
Showing how the air tubes
within them divide and
subdivide.

15. The lungs are two big spongy bags within the chest, on either side of the heart. They contain millions of tubes and tiny air pockets which have very thin walls between them and tiny capillaries of the blood tubes that lead from the heart. The work of the lungs is to draw from the blood the impure gases carried

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from the tissues, and to give back to the little red blood cells fresh supplies of oxygen taken from the air we have inhaled. It will be clearly seen now that the air we breathe out must be impure, while the air we breathe in should be fresh and pure. Trees and plants absorb from the air the gases breathed out from our lungs.

II. Ensure a thorough understanding of the cell life of the body. Show cells in halved oranges. Examine closely cells in plants.

Show a penny — shape of red blood cells.

Emphasise the work of the white blood cells ("soldiers" or "policemen"). 5,000 white blood cells would just extend across a halfpenny.

Master the circulation route of the blood (arteries — capillaries — veins — heart — lungs — heart — arteries).

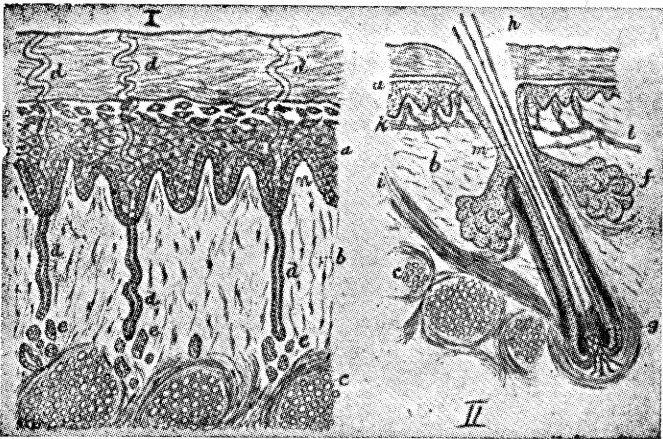
Find pulse on wrist, and under jaw on either side of the throat (blood passing to hand and head).

Give visual illustration of quick actions through messages to and from the brain.

CHAPTER III.

MORE ABOUT OUR BODIES

1. **The skin** is really an organ of, as well as a cover for our bodies. It helps to regulate the temperature of the body and to purify the blood by means of the little sweat ducts or pipes, of which there are hundreds to every square inch of its surface. As we become overheated, the skin, or rather, the



SECTIONS OF THE SKIN

- (a) Outer skin, (b) True skin, (c) Fat cells, (d) Sweat ducts, (e) Sweat glands, (f) Hair glands, (g) Root of hair, (h) Hair, (i) Hair muscle, (k) Blood vessels, (l) Nerve endings.

network of small arteries and capillaries just under the skin, relaxes and lets the blood come to the surface of the body. As we grow cold the blood is kept back

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more and more from the surface and allowed to become heated.

2. While the blood is near the surface the sweat glands take from it certain impurities, and these come away in moisture or perspiration. This moisture, while evaporating, helps to cool the overheated body; and so the temperature is kept, when healthy, at an even heat, which (when tested in the mouth) reaches about 98.4 degrees Fahrenheit. In many illnesses the temperature of the body rises and then the patient is said to be feverish; in extreme cases of illness the temperature falls below 98.4 degrees.

3. **The digestive system.** The chief parts of this are the mouth, stomach and bowels. By digestion, we mean the breaking up and dissolving of food, so that it can be absorbed easily into the blood, and carried to the tissues. The work of digestion begins with the teeth, when we chew or break up hard foods. Starchy foods, such as potatoes and grains, are acted upon by the saliva that comes from glands under the tongue. Next time you eat mashed potato, notice how it dissolves in the mouth within a few seconds. The starch has begun to change into sugar, the process being completed in the stomach. Another juice called gastric juice comes from the linings of the stomach and begins to digest other kinds of food, such as meat, cheese, eggs, etc., when they reach that organ.

4. When we swallow our food the pear-shaped stomach acts like a churn, mixing the food and digestive juices; and when it is working properly, a little gate at the farther end prevents the contents of

the stomach from passing on to the bowels until all the good food has been well dissolved. The linings of the stomach and bowels are rough and spongy, something like a Turkish towel, and in the rough lining are myriads of tiny blood vessels. It is through the very thin walls of these blood vessels that the liquid food and drinks are absorbed into the blood. Only the useless parts of any wholesome food fail to be so taken up by the "life stream."

5. **Other Organs.** Each of the dozen or more other organs within the body has a special function. The liver, for instance, stores sugar, purifies the blood, and supplies a juice called bile to emulsify or change the fats in our foods, so that they will dissolve and mix readily with the blood. The pancreas and the glands in the walls of the stomach and intestines assist in digesting the food. The kidneys and other glands help in keeping the tissues healthy, and in maintaining life generally.

6. **Fat.** The fat, which is stored surplus food and is found between and around the muscles, tissues and organs, acts as a cushion and also helps to keep the body warm.

7. **Growth, waste and repair.** The body, like any other machine, wears as it is used. It is said that every part is renewed at least every few years! Some parts are renewed every few months. This wearing out and renewal call for constant supplies of fresh wholesome food, of the kinds and in the proportions required for the repair of each kind of tissue. For growing children — compared with the size of their bodies — more food

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is required than for adults, because, while growing, they are increasing the size of their bones, muscles and other tissues. No wonder children are so often hungry!

8. Not only do children require more to eat in proportion to their weight—a boy or girl of 16 or so eats more than at any other time of life—but their food must contain what are called vitamins to assist growth. These are chiefly contained in milk, butter, fresh fruit and vegetables.

9. **The burning up of food and worn out tissues in the body produces heat and energy.** Just as the uniting of the oxygen from the air with the grease of the candle produces heat as it burns, so the oxygen collected in the blood from the lungs creates heat and energy as it burns up waste tissues, and fatty or other carbon-laden (carbonaceous) foods within the body. The body of an adult needs from 16 to 18 ounces of carbonaceous food every day.

10. Not all carbon-laden substances are complete foods. Alcohol, for instance, will burn up in the body, but its other effects upon the tissues and blood are such that it cannot be classed as a proper food; nor can it be stored for future use like fats and starches, nor used to repair and renew the body like the meaty and similar foods (protein).

III. Memorise normal temperature (98.4).

Show clinical thermometer, if available.

Explain the cooling down effect of perspiration.

Illustrate with burning candle, oxidisation (burning up), producing heat.

Suggest the trial, at the first opportunity, of the mashed potato experiment in the mouth—the beginning of digestion.

CHAPTER IV.

HEALTH HABITS

"Health is Wealth"

1. Having now learned the functions or purposes of most of the main parts and organs of the body, we shall more readily understand the reasons for having health rules for our daily life, and the need for personal (bodily), civic (town) and national hygiene. These rules are very simple, and they are not suggested without good and sound reasons; for (we repeat what we said at the beginning) the human body is verily "the temple of God," and it should therefore be kept clean, strong, and beautiful.

2. **Disease germs are the chief enemies of health.** It is not so long ago that scientists discovered that



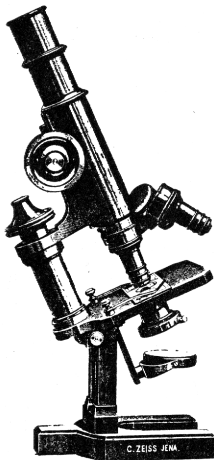
A RED BLOOD CELL (1) COMPARED WITH DISEASE GERMS
 (2) Diphtheria, (3) Tuberculosis, (4) Cholera, (5) Typhoid,
 (6) Anthrax

tiny microbes or germs were the chief cause of ill-health. To a famous French scientist, Louis Pasteur, we must give credit for first explaining (in 1865) the mystery of this germ life. Just as grubs and other insects destroy fruit and flowers, and as moths destroy

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our clothes, so these very minute germs destroy the body-cells and tissues.

They are so small that they can only be detected



A MICROSCOPE

(seen) with the aid of a very powerful microscope. A fly's leg to many of these tiny creatures would be like an elephant's leg to a very small ant! And there are hundreds of kinds of these germs, of various shapes and sizes, just as there are hundreds of kinds of insects.

3. Some forms of germ life are friendly and helpful, but certain kinds, especially those found in dirt and decayed matter, are just as serious enemies to our health as are the grubs to the fruit, and the slugs to our gardens. We shall hear much about these germs as we study the rules of health or hygiene.

PERSONAL CLEANLINESS

“Cleanliness is next to Godliness.”

4. **Bathe daily.** The skin must be kept clean in order that the little sweat glands can throw out the impurities of the blood, and so that the temperature nerves just under the surface of the body can be kept working properly. This is specially needful in the hot weather, when we perspire much more freely than during cold weather. After bathing we should rub the body vigorously with the towel as we dry. This gives a tone to the skin, and exercises its many tiny glands. Bathing regularly also prevents unpleasant body odours.

5. **Wash the face and hands often.** Because both face and hands are exposed most of the time, and because the hands, particularly, are so often in contact with grime or dirt, we should wash them regularly. This should be done especially before and after taking food, and after playing, or using books or printed papers. Special attention is necessary for the nails.

SOUND TEETH

6. **The care of the teeth is very important;** for upon their soundness we depend much for good health, a good appearance, and clearness of speech. When particles of food are allowed to remain between or around the teeth, little decay germs quickly get busy eating their way through the shiny white enamel. Once this enamel is destroyed these decay germs very soon eat away the tooth itself, leaving a nasty hollow which becomes a breeding ground for still more germs that may cause serious ill-health, and much pain from

toothache. The gums also may be affected, and all kinds of poisonous matter may gather in the mouth and be swallowed.

7. **The teeth and gums should be thoroughly brushed night and morning**, and, as far as possible, after each meal. Brushing keeps them nice and white and ensures freedom from decay. Eating plenty of fresh fruit and green leafy vegetables also helps to keep a polish on the teeth.

8. **Sound teeth help us to masticate (chew) our food properly** and to preserve good digestion. Half our digestive troubles come from neglected teeth.

If there are any signs of decay the teeth should be attended to at once by a qualified dentist.

9. **Care of the nails.** It is said that "dirty nails denote bad breeding. Certainly well kept nails add to one's appearance, and — what is more important — keeping the nails clean, by scrubbing with a nail-brush and soap, prevents the lodging and carrying of germs which lurk wherever dirt is allowed to gather.

Nicely trimmed nails bespeak refinement; but remember — nails should be attended to at home, and not in public.

10. **Have your own brushes, towels, etc.** It is hoped that no one would think of using any except his own toothbrush. It is also wise for everyone to have a towel, soap, hairbrush and comb which no one else is allowed to use. This is specially necessary in schools, public boarding houses, and hotels, and wherever many people are using the same baths, basins and toilet rooms.

Diseases from the skin, eyes and mouth of others are often carried from one person to another by neglect of this rule.

11. **Clean Clothes.** Not only for the sake of good appearance do we need to wear clean clothes. Remember the motto, "**Where there's dirt there's danger.**" The dirt of the roads that constantly gathers in our clothes is full of germs; and these, with grime and sweat allowed to remain in clothing—especially under-clothing—become the source of disease and a menace to health.

12. **Change your under-garments frequently, especially in the summer-time.** Not only are they then more easily washed, but they are kept free from objectionable odours.

IV. Sketch roughly the shapes of the various germs (from the illustration given).

Show a microscope, if available.

Shake chalk dust in a sunbeam—some germs are a hundred times smaller.

Enlarge upon the destruction of gardens by insects and other pests—germs act similarly on body tissues.

Memorise—"Where there's dirt there's danger."

CHAPTER V.

MORE HEALTH HABITS

"WHAT AND HOW TO EAT"

1. Hundreds of books have been written on this subject, containing many and varied suggestions for proper diet; but it is sufficient here to set out just the simplest rules:

2. **Food should be wholesome.** We mean by wholesome food—that which is fresh, free from decay, and which contains nourishment for the tissues of the body.

3. **Food should be correctly cooked.** When foods are not properly cooked they often irritate and hurt the stomach, bowels, etc., and overwork them. Cooking improves the appearance and taste of food, and frees it from germs so that it keeps better.

4. **Food should not be all of one kind.** The body needs tissue-building food, heat-giving food, and mineral salts for bone formation and body fluids. The body must have what is called a mixed diet containing the valuable vitamins or health salts for the sustaining of life and health, which are found chiefly in fresh milk, butter, eggs, together with fresh fruit and vegetables.

5. **Eat plenty of fresh fruit and vegetables.** We cannot keep healthy without these. In olden days, when sailing ships were at sea for months at a time, there were no refrigerators for preserving food, and so fresh fruit and vegetables could not be kept for any length of time. The result was that the crews often

suffered from scurvy and other diseases. Captain Cook was the first to undertake a long sea voyage without any of his men dying of scurvy.

6. **Eat only sound ripe fruit.** Unripe fruits contain irritating acids, which disappear as the fruit ripens. Even partly green fruit is often dangerous, especially for children. Fruit that is decayed or rotting is just as dangerous. It may set up marked irritation in the stomach, causing painful and serious illness.

7. **Avoid too much rich, highly seasoned food.** By rich food we mean fatty pastry, fat pork, rich or heavily iced cakes, creamy chocolates and other sickly sweets. Eating too many sweets of any kind is bad for us. They should only be eaten at the end of a meal, and never in between meals, as they spoil one's appetite for better food. By highly seasoned foods we mean those containing much salt, pepper, mustard, vinegar, pickles and other condiments. If we would preserve healthy digestive organs we must use all condiments very sparingly, if at all.

8. **Chew well — eat slowly.** People who bolt their food are bound to suffer in the long run. Thorough chewing helps the teeth, breaks up the food properly, and allows the juice of the mouth (saliva) time to do its part in digesting (dissolving) the particles before they are swallowed. Washing the food down with drinks, before it is thoroughly mixed with the saliva, is not a good practice.

9. **Have meals regularly.** It is a mistake to be always eating. The stomach needs rest, just as much

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as do the legs or the brain. Meals may be enjoyed much better, and they do more good when time is given for one meal to digest before another is taken. It is a good rule to stop eating just before we feel we have had enough.

10. **Protect all food and food vessels from flies and dust.** Flies are filthy little scavengers. They crawl all over the garbage, manure, and other dirty places, and then, with their feet and legs laden with all kinds of disease germs, fly into the house and on to the food. Flying dust, too, carries germs. Do not leave food where either flies or dust can pollute it.

11. **Keep all cooking, eating, and drinking vessels clean.** Vessels allowed to stand without washing are a sure harbour for germs and fermentation that injure the health.

WHAT TO DRINK

12. **Water is the only real thirst-quencher.** Without water we cannot live more than a few days, and an adult requires not less than three pints every day.

There are many other drinks, however, that contain foods, salines and flavourings, that make them healthful and pleasant to take.

13. **Milk is one of the best drinks** we can have, because it contains all of the foods the body requires (though not enough of them to take the place of solid foods as we grow up). It is particularly suitable for growing children.

14. **Fruit drinks are healthful, too.** Such drinks as orange and lemon squashes and grape juice are very

healthful, and especially pleasing in the summer.

15. **Tea and coffee** should be taken sparingly by growing young people, and not at all before 16 years, because they contain an excess of tannin and substances which overstimulate the tender linings of the stomach and nervous system of children. Cocoa is a good winter drink.

16. **“Fizzy” drinks should also be taken sparingly,** for the excess of gases in the stomach may interfere with the action of the heart if exercise is taken soon after drinking.

17. **Avoid alcoholic drinks altogether.** The alcohol they contain is a poison to the human body, especially to the tissues of growing children. So important is it to know this, that we have prepared special chapters in this book upon the subject. (See from chapter xi.)

18. **Drink slowly when overheated or parched.** We must drink slowly when we are hot or when the body has been without water for a long time. If out walking where water is scanty, we should carry a supply, and keep some in reserve for emergency.

Drink plenty of clean pure water; it is the best of all drinks.

V. Reiterate captions of each paragraph.

Give a more detailed account of Captain Cook's experiences without fresh foods.

Tell the story of some travellers' or explorers' experiences without water.

CHAPTER VI.

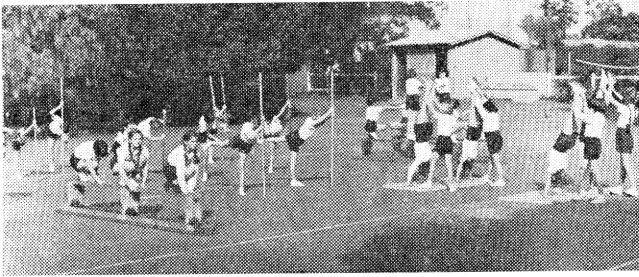
STILL MORE HEALTH HABITS

1. The body needs exercise, rest, air and sunshine.

If any one of these is neglected, the body is sure to fail in health.

EXERCISE

2. Exercise keeps the muscles and organs strong and healthy. It is exercise that helps to produce strong muscles, graceful movements, and healthy organs, as well as a clear mind.



3. Everyone should take up some sport or hobby. We call our sports or hobbies recreation. This word means creating afresh (re-creating). Those who have much indoor work should seek hobbies or sports in the open air, such as gardening, walking, tennis, cricket, football, or similar pastimes. On the other hand, those who are outdoor workers should take up some hobby quite different from their regular work. To such, reading, debating, or other mental work, acts as recreation.

4. Healthy sport is a splendid aid to self-control,

for it cultivates in us the team spirit and teaches us to “play the game,” as well as to endure and become quick and active.

5. **We can over-do it when exercising.** To indulge in sports or any other severe effort until we are exhausted, spoils the good effect of those exercises. Only in extreme need—such as when rescuing another, or getting ourselves out of danger—should we use up all our reserve energy.

6. **Over-excitement is unwise before going to bed.** There should be a rest period before going to bed in order to obtain the best from our sleep.

7. **When over-heated or perspiring, we must watch against chill.** We should wrap up before we have cooled off. When unable to wrap up it is better to keep moving about, if that be possible, rather than to sit down and become unduly cold.

REST

8. **The body and mind must have periods of complete rest.** It is an old saying, that a change is as good as a rest. This is not altogether true. Everything needs rest. Plants sleep and rest in the winter time and at night. Birds and animals all have their sleeping and resting times; and so must every part of our bodies have its periods of rest. We may not realise it, but even the lungs and “the busy little pump”—the heart—have their periods of rest. The lungs rest between breaths, and the heart between each beat. It is while the body and mind are resting that the blood is best able to re-build the worn-out tissues or cells, and it is for these reasons that nature lulls us to sleep when

we are tired.

9. **Young people should have plenty of rest and sleep** because their minds and bodies are usually so very active all day long. It is a good old maxim:

“Early to bed, early to rise

Makes a man healthy, wealthy and wise.”

Even apart from sleep, we should have, during the day, periods of rest from both mental and physical work. These are usually taken at meal times.

FRESH AIR

10. **Fresh air is all-important in maintaining or restoring health.** Good food is necessary to life; clean water is still more necessary; but the most necessary of all is fresh air. The air we breathe out from our lungs must not be breathed back again. It becomes poisonous. If a number of people are kept in a small room with every opening sealed up, they will gradually become stupified, and finally fall off to sleep; and, unless someone lets in the fresh air, will never wake again.

11. **Sleep with windows open at night.** The air in a bedroom should be constantly changing, if we wish to waken feeling fresh in the morning. It is while we sleep that the most of the repair (recreating) work goes on in the body, and, as the air we breathe out contains poisonous gases, it will be seen how important it is always to have the bedroom airy while we sleep.

12. **Breathe with the mouth closed.** The nose acts as a filter for the air we breathe and thus keeps out many dangerous germs and dust particles. It also warms the air before it passes into the lungs.

SUNSHINE

13. **Sunshine is a wonderful health giver.** Sunshine (in moderation) acts as a wonderful tonic to the skin — in fact to the whole system. It purifies the air and destroys disease germs; and, just as plants will not grow successfully without the air and the sun, neither will the body maintain its health without the sun's beneficial rays. Sunshine by its action on the skin reinforces the vitamins in the foods we eat.

14. **Of course, we can get too much sun.** It is not wise to get sunburnt. As summer comes in, swimming and sunbathing should be indulged in for short periods — only twenty minutes or so, and not in the middle of the day. As the skin browns the period may be lengthened. Hats should be worn when out of doors most of the day, to protect the eyes from the glare and to prevent the exposure of the skin of the face to sunlight. Where hats are unsuitable, eye-shades are useful.

THE CARE OF THE EYES

15. **Read only in a good light.** Sight is one of our most precious possessions. Reading in a poor light, or reading very small print for long periods is a big strain on the eyes, and will surely injure them before many years have passed. Reading with brilliant sunlight on the page, or with a light, such as the glow from a fire, in front of one's book and shining into the eyes, is also injurious.



WE SHOULD DO
FINE WORK IN
A GOOD LIGHT

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16. It is best to have the light from above and over the shoulder when reading or writing or doing any other fine work calling for the continuous use of the eyes. The light should never shine on the eyes. A book, when reading, should be at least twelve inches (a foot-rule) distance from the face.

EIGHT SIMPLE RULES

17. It may not be easy for young people to remember all that has been set forth in these chapters on Health Habits, but at least they should not forget these eight simple rules for keeping fit and well.

1. Chew your food slowly and thoroughly.
2. Brush your teeth morning and night.
3. Keep the skin clean by frequent bathing.
4. Drink plenty of fresh pure water.
5. Sleep as long as you can every night.
6. Play games in the open air and sunshine every day.
7. Have windows open when working or sleeping.
8. Eat every day the foods that will keep you well and help you to grow.

VI. Dwell upon the word "re-creation."

Ask for favourite sports and hobbies, and why?

Draw attention to ventilators and open windows.

Put board or sheet of iron on a patch of grass — no growth without sunlight.

Illustrate the wrong way for light — shadow from pen and hand when writing, when light is on the wrong side.

Have the "eight simple rules" memorised.

CHAPTER VII.

HOME AND CIVIC HYGIENE
"Where there's dirt there's danger."

HAVING A PRIDE IN OUR HOMES

1. **Another name for Hygiene is health.** Not only should we know how to keep our bodies clean and healthy, but also some of the rules that make for cleanliness and health in our homes, in our towns, and among the people as a whole. In other words we should learn to be good citizens, and should take an interest in the health laws of our country.

2. **All good citizens take a pride in their homes and their towns,** for, be they ever so small or humble, they reflect the kind of people who live in them. What a joy it is to pass along a street of neatly kept cottages, and what an eyesore even one badly kept house is among its tidy neighbours! An untidy or dirty home spoils the street or town.

3. **Back yards as well as front gardens should be tidy.** Rubbish, old tins, boxes, bags, and paper are always a harbour for dirt and disease.

4. **Decayed vegetables, peelings, and similar refuse are a great danger near a house.** This is why every home should have a garbage tin with a proper cover, and why every up-to-date town has garbage collectors to take away the refuse from the houses week by week. Where there is no garbage service such refuse should be regularly burned (only bury rubbish which will not

burn), for it is in such that disease germs breed rapidly.

5. **House flies carry disease from garbage.** These dirty little pests crawl all over any filth they can find; and then, with their legs laden with disease germs, fly into the house to settle on the food, or crawl around baby's mouth and eyes. House flies carry typhoid and are also responsible for the deaths of many babies.

6. **Flies breed in old papers, garbage and manure.** This is one of the strong reasons why no such filth and rubbish should be allowed to remain about or near a home.

7. **Protect your rooms from flies.** By keeping the yard free from refuse and rubbish, and by keeping covers on the garbage and sanitary pans, we can do a lot to keep down the fly pests. In rooms where flies are a nuisance, wire door and window screens should be fixed, and fly sprays or catchers should be used inside. If we cannot wholly rid our homes of these disease carriers, at least we can lessen their numbers, if we try.

8. **Leave no breeding places for mosquitoes.** Mosquitoes carry malaria and dengue, from one person to another. They lay their eggs in stagnant pools, old tins and tanks, and other open vessels holding water. There the larvae and wrigglers develop and later on the flying insect hatches out. Get rid of these breeding places if it is possible. Where there are tanks, a teaspoonful of kerosene, say, once a month, poured on top of the water, will kill the wrigglers, and will not spoil the water for drinking.

HEALTH AND BEAUTY IN OUR TOWNS

9. **Crowded houses are unhealthy.** Where houses are crowded together with very small yards, in narrow streets, and without natural light, the people who live



SLUM DWELLINGS

in them cannot remain healthy. It is for this reason that progressive towns and cities are pulling down these slums, as they are called, and are compelling owners to build houses with more air and light spaces around them.

10. **Every home should have airy sunlit rooms and yards,** and no progressive city should allow houses to be built otherwise.

11. **Public halls, churches, and all buildings where large numbers of people gather should have plenty of ventilation;** and windows should always be open when such places are full of people. Otherwise the atmosphere will become stuffy and poisonous in a few minutes. Offices, shops and factories, like our homes, should have abundance of light and air. People who have to work all day in stuffy, sunless buildings run the risk of losing their health.

12. **Shops and food services should be models of cleanliness and good order.** Upon a good, clean bread, milk, meat and fruit supply depends much of the

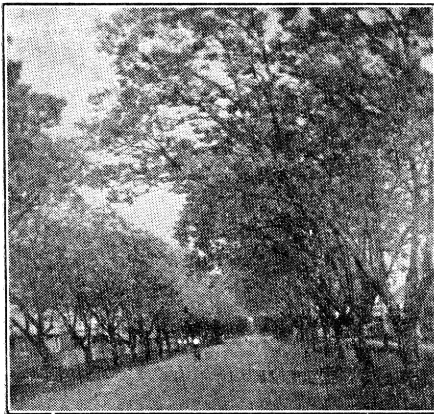
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people's health. All food shops and food vehicles need to be cleaned out daily. For this reason we appoint inspectors to see that these health laws are observed; but well-kept food services and shops need never fear the inspectors.

13. Water and sewerage services are important. Wherever a town begins to grow into a city it needs a good water supply and a sewerage system.

Sewers are not possible without the provision of water. Both are expensive, but what they save by preserving good health makes these services a boon to any community.

14. We should keep our streets, parks, and gardens tidy. Careless throwing about of papers, peelings and



A TREE-LINED STREET
Beautiful Jacarandas at Grafton, N.S.W.

rubbish is not good citizenship. The streets, the parks and gardens belong to all of us, and it should be our ambition to make our city or town the tidiest and best kept in the land.

15. Every city should have "lungs" — that is, parks

and open spaces. People should be encouraged also to plant trees in their streets, and, where possible, in their own gardens, for not only do these beautify the town and home, but they also absorb the waste gases breathed out from our lungs. Trees also help to keep the air pure, and are a joy to everyone. Parks and playgrounds also provide places for those shut in at home and at work, to enjoy, during periods of recreation, the fresh air and sunshine that all must have to maintain perfect health.

Protect the trees and flowers. Breaking down boughs from the trees, and picking or destroying the shrubs and flowers in our parks and streets, are crimes of which no good citizen would be guilty. A damaged tree or shrub may take years to replace; and we fail to do our duty when we do not report anyone who wilfully spoils these valuable aids to the health and beauty of the community.

Beautiful surroundings are a joy to all. Whatever we can do to beautify our homes, our streets, and our towns, gives not only pleasure to ourselves and to all who pass by; but also, by the very atmosphere these surroundings create, gives us health and refinement that add to the true wealth of the nation.

VII. Draw attention to the unsightliness of some local neglected area or building—contrast it with a well-kept locality.

Emphasise the beauty of tree-lined streets and gardens, as contrasted with bare surroundings.

Place mosquito larvae in water—watch development of the insects.

Who likes smelly yards and drains, stuffy rooms, dirty shops, flying papers, flies and dirt?

CHAPTER VIII.

"FIRST AID" HINTS FOR YOUNG PEOPLE.

What To Do Till The Doctor Comes

1. **Nearly everyone at some time or other is called on to assist an injured person.** For this reason every boy and girl should learn early what to do in case of accident, for the prompt rendering of "first aid" may mean the difference between life and death. First aid will always help to relieve pain and suffering and often give the victim of the accident a chance to recover quickly and completely.

2. In these two brief chapters we cannot attempt to give a full course of instruction in "first aid." Books covering the complete course may be purchased for a small price. The instructions given here, however, are ample for the guidance of young people who may not yet be quite old enough to study the subject fully.

3. **Let us keep in mind** that there are two kinds of accidents, (1) those that happen within or close to a house, or where help and first aid materials are at hand, and where the doctor can be summoned quickly, and (2) those that may happen far away from any kind of help. In either case the main objects of "first aid" treatment (that is, until a doctor can take charge) are:

- a. To keep the sufferer alive.
- b. To prevent further injury.
- c. To make the patient comfortable.

4. **The first things to do, if possible, are:**
 - a. **Stop any bleeding, or restore breathing.**
 - b. **Remove the cause of injury.**
 - c. **Remove the patient to safety (if necessary).**

5. **Keep calm and cheerful.** To appear to be excited, alarmed, or worried has a bad effect upon a sufferer. "Presence of mind," and quiet assistance, not only aid the sufferer, but prevent the likelihood of mistakes being made.

6. **To stop bleeding is all important,** for serious loss of blood may cause death. It would take too much space here to describe in detail the methods for preventing the loss of blood. Always make the person lie down and rest quietly. Elevate, where possible, the bleeding point, and with a clean pad press directly upon it. In case of the limbs, tie a band or ligature tightly and firmly around the arm or the leg above the bleeding point. Get a teacher (or someone else who knows how) to show what to do to stop bleeding, and how to make and use a tourniquet (pronounced "torn-i-ket"), ligatures and bandages and where to press to stop the flow of blood; or get the "first aid" book of the St. John Ambulance Association and study it yourself.

7. **The patient must have fresh air.** Make the crowd (if any) stand back. If the accident has happened in an enclosed space, try to get a current of air through, or, if the patient can be lifted without further injury, have him carried into the open.

8. **Avoid giving spirits.** So many make the mistake of rushing for brandy or some other alcoholic liquor. These may prove definitely harmful. The St. John Ambulance Association lays down a rule that alcohol should not be given until after the arrival of the doctor (that is, on his orders only).

9. **See that a doctor is called as quickly as possible,** and the ambulance, too, if there is one near enough; and, in the message to the doctor, describe, when able (and in writing) how the patient has been hurt. If far away from either doctor, or other assistance, and there is no one but yourself with the sufferer, do all possible to remove further danger, stop any bleeding, see that he is breathing properly, and make him comfortable and warm, then go for help.

10. **Shock nearly always accompanies an accident.** By shock we mean that peculiar and serious state in which the patient collapses, feels very depressed (crushed) and helpless, knocked out, looks pale, and may even faint. (Do not confuse this with electric shock, which we shall describe later.) Shock may occur from dread or fear, or great sorrow; or after a severe blow or injury; or from loss of blood, as from a deep cut; or after suffocation, as in the apparently drowned. Shock is made worse by exposure to cold, by anxiety, or by exhaustion from great effort; and, if severe, it may cause death.

11. **We can do a great deal to prevent or lessen shock,** by persuading the patient to lie down quietly (if possible, in a dark room), and, after giving him a good rub down, getting him off to sleep. He should

be kept warm between blankets; hot water bags or bottles (wrapped in flannel) should be placed around him, and he should be given hot drinks of milk, tea, coffee or cocoa, but **no spirits**. Alcoholic liquors appear to brighten up a patient temporarily and make him feel better; but, like the whip to a tired horse, they spur up the shocked body for a while and then leave it worse than ever. Be careful not to place warming bottles that are too hot against a person suffering from shock. Often patients are in such a state as not to be aware of the heat, and so nasty burns may result.

12. **When unable to get warm drinks and blankets**, the next best must be done. Cover up the patient with whatever clothing or other coverings are available. Keep him as warm as possible.

VIII. For notes on both chapters re "First Aid" (chapters VIII and IX) see end of the next chapter.

CHAPTER IX.

FIRST AID (Continued).

HOW TO TREAT VARIOUS INJURIES

1. **When a person is badly injured, or bones seem to be broken**, and there is no one available who knows how to apply splints and bandages, stop any bleeding, if you can, and very gently make the patient comfortable. Then treat him for shock (see previous chapter), and send someone for the ambulance and/or doctor.

2. **When there are bad cuts and sores**, or after stopping serious bleeding, see that the wounds are properly covered with clean bandages to keep out the dirt and germs.

3. **When clothing catches fire**, approach and smother the flames with the first piece of material available — a rug, carpet, table-cloth, coat or sack. Lay the patient down, with burning part uppermost. He should on no account rush into the open air.

4. **For burns or scalds**, carefully remove the clothing from the injured part, but if the clothing is sticking to the skin, **do not remove**. Cut around the sticking part with scissors. Do not prick any blisters, but cover the affected part quickly with clean soft material, cotton wool and bandage lightly. Send for a doctor or take the patient to a doctor. Treat the patient for shock. (see previous chapter).

MOUTH-TO-MOUTH RESUSCITATION

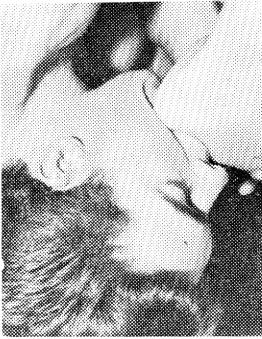
When you do it—**Immediately** a person has stopped breathing, or breathes weakly, from drowning, electric shock, lightning, suffocation or serious accident.

How you do it—Lay patient on his back, where possible, or start resuscitation where he is. **EVERY MOMENT COUNTS.**

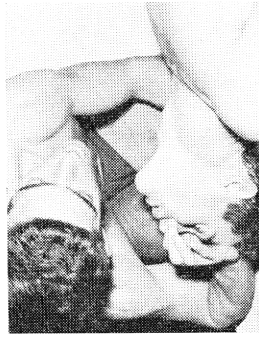
1. Clear patient's mouth, tilt head back as far as possible to open breathing passage.



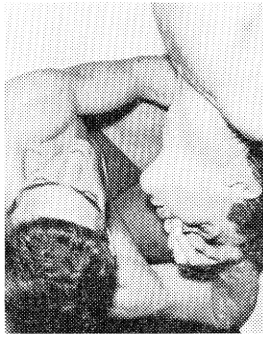
3. Seal patient's mouth with your mouth and breathe into patient until chest rises.



2. Pinch patient's nose closed, take quick deep breath.



4. Listen for patient to breathe out, watch rise and fall of chest. Continue until patient recovers.



Make your first 10 breaths fast, then 10-15 per minute. The volume of air exchanged is vital. In **DROWNING** cases over-inflation of lungs may cause damage so blow only until chest **BEGINS** to **RISE**. For babies place your mouth over both mouth and nose and just **PUFF**.

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5. **Restoring the apparently drowned.** As soon as a drowning person has been taken from the water, artificial respiration should be attempted; and every young person should learn the proper methods for restoring breathing. Lessons should be taken from a teacher or a good first aid book. One method is shown in the accompanying illustrations.

6. **Life-saving also should be learnt**, when taking lessons in swimming.

7. **Electric shock** must not be confused with shock as previously mentioned; though the treatment for electric shock is much the same, except, that, if necessary, the cause of the electric shock must be removed and breathing restored by artificial respiration.

8. **Great care must be taken not to touch a person who has been electrocuted**, if he is still in contact with the live wire or metal. Switch off the electricity if possible. Use a dry rope or stick, or a thick **dry** cloth to pull him away from danger. It is safer for young people to call for help immediately rather than to risk receiving a shock themselves.

9. **For snake-bite.** Try to prevent the poison in the bite from being carried in the blood to the heart. If, for instance, the finger is bitten, tie a string or strip of cloth tightly around the root of the finger. Wash the skin to clear away any poison on the surface. If the mouth has no sores, sucking the wound (and immediately spitting out the poison) may help. Scratch the skin around the wound and make it bleed. Rub in some Condy's Crystals (permanganate of potash) if available. Do not walk the patient but let him rest

quietly. Get the patient quickly to the doctor. **Do not give spirits.**

10. **Bites from trap-door or red-back spiders.** A ligature (tight band) should be applied if possible, to prevent the flow of poison to the heart and then the place bitten should be made to bleed as in the treatment for a snake-bite. Placing the bitten part in warm water, and keeping it low, will encourage bleeding.

11. **When a person has taken poison** which does not actually burn the mouth, give him a strong dose of warm salt and water, or warm mustard and water, to make him sick. Then without delay call the doctor.

11a. If a person has taken poison which burns or stains the mouth give copious drinks of water or milk. Send for a doctor, if possible let him know the name of the poison which has been taken.

12. **How to treat fainting.** Just lay the patient down, or, if he has fallen, straighten him out, then raise the feet. If he can be lifted to a couch or bench, let the head drop lower than the body, in order to make the blood rush to the head. Allow him, when conscious, to sip some water or other drink if available. **Do not give spirits.** Put cold water on the forehead and on the palms of the hands. Should he not come round, treat for shock (see previous chapter), and summon the doctor at once.

13. **To stop bleeding from the nose.** Sit the patient up and compress (hold) the nose. See that he breathes deeply through the mouth and avoids blowing the nose. If the bleeding persists, send for the doctor.

14. **When a foreign body gets into the eye,** prevent

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the patient from rubbing it. Pull down the lower lid, and if the cause of the trouble can be seen, remove it with the twirled moistened corner of a handkerchief. When the trouble is in the upper lid, lift up that lid, push the lower one up, and then pull the top lid down over it, so that the lower lash will act as a brush. Repeat this several times. Should this be unsuccessful, turn the lid back on a match or knitting needle and gently brush out the foreign body with the handkerchief-corner. If this fails, or if the foreign body is deep in the eyeball, drop in a little olive or castor oil, cover the eye with a bandage, and take the patient to a doctor.

15. **When a foreign body gets into the ear**, do not attempt to probe it out. Such treatment may result in lasting damage to the ear-drum. If unable to get hold of the object easily, with tweezers or the fingers, lay the head down, and pour in a little warm olive or castor oil. If this does not float the foreign body to the surface so that it can easily be removed, take the patient to the doctor at once.

IX. Playing first aid is the most effective method of teaching it.

Correct mistakes as they are made while the student is practising.

Treatment for shock, and lessons on how to stop bleeding are very important.

How to stop bleeding, how to use bandages, and "how to restore the apparently drowned" should be taught to older scholars by means of demonstrations. For these instructions see St. John Ambulance "Preliminary Course of First Aid to the Injured."

CHAPTER X.

JUVENILE SMOKING: ITS DANGERS

1. **Why do boys and girls wish to smoke?** It is not because it is pleasant; for the tobacco bites the tongue, dries the throat, and often makes them very sick. Is it not just conceit, and a desire to seem big before they are grown up?

2. **Smoking among young people does not express manliness or womanliness.** In most cases it has to be done secretly; which is surely a proof that it is unmanly and deceitful. Boys and girls who smoke often show cowardice, too; for they are usually unwilling to confess that the indulgence is making them ill.

3. **Tobacco contains a strong poison.** This sticky, oily liquid poison is called nicotine. So strong is it that one tenth of a grain may kill a dog!

An ounce of tobacco contains usually six to eight grains of nicotine (a grain by weight is one four hundred and eightieth part of an ounce), and a cigar may contain enough to kill two men!

4. Fortunately, most of the nicotine is burnt up in the smoking, but some of it is carried unburnt in the smoke and moisture drawn through the tobacco into the mouth.

Some of the pure nicotine may be caught in the stem of a pipe as the smoke cools; but in the case of cigarettes and cigars it goes straight to the delicate linings of the mouth. The stomach is very sensitive to such poisons; so much so, that when the saliva is swallowed, there is at once an effort to throw it out,

and vomiting results.

5. **Repeated doses of the nicotine finally deaden the sensitive nerves of the mouth and stomach that warn us of the presence of danger**, and the smoker then ceases to be sickened by the poison; but its effects are nevertheless being continued.

6. **Smoking is very harmful to growing children.** The nicotine in tobacco is a deadly poison to the tissues of growing children. Their tissues cannot throw off the effects as readily as can the tissues of adults.

7. **Tobacco injures the brain, the eyes and the heart.** Smoking — specially if heavily indulged in — slowly, but surely, weakens the power of the heart, takes away the clearness of the eye, and lessens the power of the brain to think quickly. General dullness is a very common complaint among young smokers.

In the annual cross-country run of the Army in England few heavy smokers finish well — say in the first ten — but form the majority of the last ten.

7a. **Tobacco smoke has a harmful and irritating effect on the delicate linings** (membrane) and the nerves of the mouth, throat, eyes, nose and lungs.

8. **Smoking and Diseases of the Lungs.** Scientific Medical Research has established a strong relationship between excessive cigarette smoking and cancer of the lungs and other serious respiratory diseases.

9. **Nicotine is a habit-forming drug.** Like many other habit-forming drugs, nicotine sets up a craving for itself. The smoking habit acquired when young, becomes, therefore, very difficult to discontinue.



LORD BADEN POWELL

10. **Lord Baden Powell — Founder of the Boy Scout and Girl Guide Movement — says:** “I shall be very glad if my name can assist in endeavouring to lessen juvenile smoking, for I am aware of the bad effects it is having on our rising generation.” Surely the statement of the leader of one of the greatest youth-health movements is worthy of our consideration.

11. **Smoking may be objectionable to others.** While smoking may in time become pleasurable to those who indulge in it, it must always be remembered that to some it is objectionable. The practice of smoking while others nearby are eating, is objectionable. Avoid such offence.

X. Emphasise the benefits and attractiveness of a well-proportioned physique, contrasted with weediness and dullness of juvenile smokers.

Explain the need of “wind” in tests of stamina and speed.

A cigar poultice on the wrist or stomach will cause violent sickness — poisoning effect of nicotine.

CHAPTER XI.

ALCOHOLIC DRINKS: THE CHANGES OF
A CENTURY

1. It was the late Honourable Doctor Richard Arthur who, while Minister of Health in New South Wales, said, "It is the right of every child to be warned of the effects of indulgence in intoxicating liquor," and "that such teaching could not be given too early." And so this book on Health would be incomplete without the study of Temperance as it relates to alcoholic drinks.

2. Early last Century it was thought impossible to live without regularly taking liquors. Even young children were taught to drink them! There were some people who would not take strong spirits, but beers and wines were part of everybody's daily diet. Then, in 1832, Joseph Livesey and John King, in the face of great opposition, started the "Total Abstinence Movement." They believed that people could do without intoxicants, and that they would be healthier if they abstained from drinking alcoholic liquors.

To prove that they were right, they resolved to sign a pledge that, God helping them, they would take "no liquor of an intoxicating quality." Their abstinence did not kill them, for both of these pioneers of abstinence lived to the ripe old age of ninety! Shortly afterwards others joined them, and formed a band of temperance crusaders who went from town to town urging people to abstain from taking strong drink.

3. The movement grew steadily. Total Abstinence

Societies began to spring up. The Rechabite Temperance Benefit Order was founded in 1843, and the Bands of Hope in 1847, both of which are now world-wide organisations. Then in 1840 the great apostle of Temperance, Father Matthew, stirred Ireland, securing hundreds of thousands of pledges; and later came John B. Gough (pronounced Goff) and many others, who slowly but surely changed the drinking habits of England and her colonies as well as other lands.

4. Science has revealed much regarding alcoholic liquors. It was not until the nineteenth century (about 1880) that scientists began seriously to study the nature and effects of strong drink upon the human system. Dr. Benjamin Ward Richardson, Physician to Queen Victoria, was one of the first great doctors to take up the subject. Since his day tens of thousands of careful experiments and investigations have been made by world-renowned scientists, social students, and statesmen, and many books have been written upon the question. The results of their research have changed nearly all the ideas of a century ago regarding the benefits that were supposed to come from drinking ales, wines and other spirituous liquors; and the putting into practice of their findings has helped much to improve the health of the people.

XI. Refer to other changes in social life, e.g., abolition of slavery and child labour; introduction of baths and bathrooms; new means of transport, etc.

Reiterate the definition of Temperance (Chapter 1).

Exhibit a temperance pledge card, if available.

CHAPTER XII. WHAT IS ALCOHOL?

1. **The alcohol used in liquors** is a liquid drug, which is clear like water, evaporates quickly and burns easily. It is made by fermenting sugary liquids. Without alcohol, drinks would not be intoxicating. It was first discovered about 1066 A.D., by the Arabs, who found that it could be separated (distilled) from the fermented liquors. The word alcohol comes from two Arabic words: "al," — the, and "kohol" — spirit or light essence.

2. **A poison and a drug.** Sir Andrew Clarke, M.D., a great London doctor, said: "Alcohol is to be classed with strychnine and arsenic and opium as a poison," and the special committee of England's greatest doctors and medical scientists, which, during the Great War, wrote a report on "Alcohol — its action on the human organism," stated (page 149): "from first to last it is a narcotic drug." Sir Anderson Stuart (Dean of the Faculty of Medicine in the Sydney University) described alcohol as, "a body-destroying substance."

3. **Methylated spirits is alcohol in a crude form.** It contains usually about ninety per cent. pure ethyl alcohol (as the kind found in intoxicating drinks is called), and about ten per cent. of wood or methyl alcohol. The latter is added to make the spirits bitter and undrinkable. A little naphtha (something like kerosene), is often added to make it still more objectionable for drinking.

4. **Alcohol is in many ways different from water**, as these simple comparisons will show:

Water	Alcohol
Boils at 212 degrees.	Boils at 172 degrees.
Will not burn.	Will burn.
Will freeze.	Will not freeze.
Has no smell.	Has a strong smell.
Will not dissolve resin.	Dissolves resin, etc.
Softens food.	Hardens food.
Quenches thirst.	Creates thirst.
Makes seeds grow.	Kills seeds.
Is necessary to life.	Is a poison.
Keeps body cells healthy.	Injures body cells.

5. **Alcohol is a very useful chemical**; in fact, next to water, it is used more than any other liquid in the manufacturing world.

Here are some of its many uses: For making varnishes, stains, polishes, perfumes, photographic plates, leatherettes, linoleums, dyes, celluloid, artificial silks, lead pencils, tinctures, ether and chloroform, thermometers, spirit levels, motor spirit, and smokeless powder. It acts as a solvent (dissolver) for gums, camphor, waxes, etc., and it is used in spirit lamps, and in dryers. It is certainly "a good creature of God," but that does not say it is good for drinking. It may be said to be good for dead things, but not good for "live" things.

6. **The interesting word intoxicating.** When Joseph Livesey signed the pledge to abstain from all liquors

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of an intoxicating quality he used a most interesting word. It comes from the Greek word "toxicon" (a poison), the name of the substance into which the old Greek warriors used to dip their arrows. In our language the word toxic now means poisonous, and intoxicating means having the power to poison, so that intoxicating liquors are those having the power to poison.

7. **The term strong drink** is often used to describe the liquors that contain alcohol; but that does not mean that they will make a man strong, any more than does the term soft drinks (as applied to non-intoxicating beverages) mean that they will make him soft. Rather does the term imply that strong drinks contain a strong poison (alcohol) while soft drinks contain none of it.

8. **The meaning of alcoholic**, as applied to drinks, is simply that they contain alcohol.

XII. Show alcohol in a bottle (methylated spirits will serve the purpose), and burn a few drops in a tin lid.

Emphasise contrasts between alcohol and water.

Explain the drugging action of ether (from alcohol) and cocaine (used by dentists)—alcohol is similar.

Draw attention to articles within the room, in which alcohol was used when they were manufactured.

Dissolve in alcohol: resin (makes polish), sealing wax (resin and chalk), camphor (making spirits of camphor), etc.

Extract colour from green leaves with alcohol (vegetable dyes).

Exhibit spirit level; and thermometer with red or blue line (alcohol type).

CHAPTER XIII.

THE MANY KINDS OF LIQUOR.
HOW THEY ARE MADE.

1. Every kind of intoxicating liquor in common use contains alcohol, and without it none of them would make a person drunk. The amount of alcohol varies in the different kinds of liquor. They may be divided into three classes—beers, wines and spirits, and the table below shows the average amount in each.

2. The quantities of alcohol (by weight) in each kind of strong drink are as follows:

Wines		Beers	
Claret,	15%	Beer or Ale,	7%
Hock,	14%	Porter,	5%
Sherry,	20%	Stout,	6%
Port,	25%	Lager,	4%
Champagne,	13%		
Spirits			
	Brandy,	50%	
	Whisky,	50%	
	Rum,	55%	
	Gin or		
	Schnapps,	50%	
	Liqueurs,	50%	

It will be noticed from this table that beers are the weakest in alcohol, that wines are stronger, and that spirits are very strong. In fact, spirits average one-half alcohol! It is because of the different strengths of

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the liquors that larger or smaller vessels are generally used to serve them. The stronger the liquor, the smaller the glass.

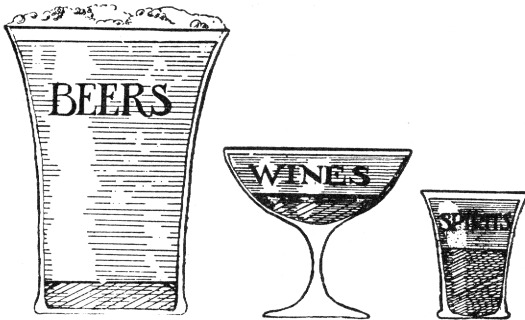


DIAGRAM SHOWING THE AVERAGE AMOUNT OF ALCOHOL CONTAINED IN (a) BEER, (b) WINE'S, (c) SPIRITS

3. **How intoxicating drinks are made.** **Beers** are made from grain, the starch of which is turned into sugar by the process called malting, and then fermented with yeast. Hops or other flavourings are added.

Wines are made chiefly from fermented grape juice, to which extra alcohol is added. The adding of spirit is called fortification.

Spirits consist of alcohol distilled (or boiled) out of fermented liquors and mixed with water, colouring and flavourings.

Whisky is made with the alcohol from grain (and sometimes potato) liquor.

Brandy is made with alcohol from wine.

Rum is made with alcohol from fermented cane sugar.

Gin is whisky spirit flavoured with juniper berries.

Liqueurs are mixtures of spirits with other strong drugs.

Cocktails are mixtures of several kinds of liqueurs and spirits.

Punch-bowl, or punch, is a mixture of strong wines, lemons, etc., to which spirits are often added.

Claret Cup is a mixture of claret, lemonade and lemons. It is **not** a soft drink, and is often stronger than beer.

Cider is made from fermented apple juice, and is often 10 per cent. alcohol. There is also a non-intoxicating cider manufactured.

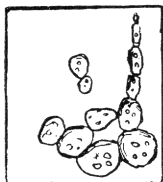
Pure grape and other fruit juices contain no alcohol.

THERE IS NO ALCOHOL IN THESE



4. **Nourishing Malt.** When making beer, the brewer has first to change into sugar the starch in the grain he uses. This is done by a process called malting. He moistens the grain and spreads it out in a warm room. When it begins to sprout and the little blades appear, the starch within the grain turns into sugar. The grain is then quickly dried, and the sprouts are killed. The grain is next crushed, and the sugar, or malt, is boiled out. This malt is a very nourishing, partly-digested food, and is often used for invalids; but practically all of its nourishing goodness disappears when it is fermented and turned into beer.

5. **Fermentation.** The fermentation, which produces alcohol in beer, wine, etc., is caused by tiny yeast-cells floating in the atmosphere, and found also on the skins of fruit. Brewers keep batches of yeast-cells for hastening the fermentation. They multiply very rapidly



YEAST CELLS
multiplying in
sugary liquids

in warm sugary liquids, and as they grow in numbers they use up the sugar, turning it into two other chemicals — carbon-dioxide (or carbonic acid gas) and alcohol. Both these chemicals are poisons to the human system.

Most of the gas goes off in bubbles, but the alcohol remains in the fermented drink, which goes on fermenting, if allowed, until all the sugar is used up, or until it contains about thirteen per cent. of the alcohol. The alcohol then kills off all of the little yeast-cells that produced it.

6. **This fermentation of drinks is really a process of decay**, somewhat akin to the rotting of fruit, the going bad of meat, and the going sour of milk. They are all produced by organisms of decomposition. Bakers use yeast for making their bread rise. Only a very little alcohol is produced in making a batch of dough, and this is driven off by the great heat of the oven during the baking.

7. **Distilling** is the process by which alcohol is extracted from fermented liquors. It is this distilled spirit that is used for making whisky, brandy, and

rum, and for making wines stronger, or fortified, as it is called; and it is by this distilling process that alcohol is extracted for manufacturing and its many other uses.

XIII. Sketch on a blackboard three glasses from diagram — use coloured chalks: green for glasses; brown for beer; purple for wine; yellow for spirits; and red for alcohol.

Moisten and germinate grain in a damp cloth — it is malted when shoots appear.

Explain changes by fermentation — from nourishing grain or fruit to, finally, gas and alcohol.

Two or three spoonfuls of sugar in a medicine bottle of water, left open, ferment in few warm days — observe bubbles (carbon dioxide gas), and strong odour (alcohol) —

CHAPTER XIV.

ALCOHOL AS A BODY BUILDER

1. **Is alcohol a food?** In the chapter on "Our Bodies" (chapter III), we spoke of the growth, waste and repair of the body tissue, and the need for food to produce (1) new tissue, (2) heat and energy, and (3) salts to keep us fit. The question is, "Does alcohol supply any of these?"

2. **There is no tissue-building substance in alcohol,** it cannot be stored in the body, nor can it be classed as mineral salts; but, because alcohol can burn (contains carbon), it does produce heat; in fact most of it burns up in the body, when it is taken in moderate quantities. However, as it causes the skin to flush, much of this heat is quickly lost, and there are other things to consider. Professor Harvey Sutton, one of the leading health authorities in Australia, who was at one time Director of the School of Public Health and Tropical Medicine at Sydney University, describes alcohol as:

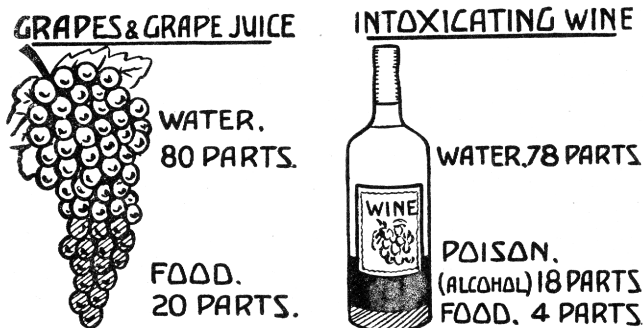
**"A third-rate food,
A second-rate drug,
A first-rate poison,**

and not a true stimulant."

3. **Why is alcohol a "first-rate poison"?** Because, while it may burn up and create heat, it, at the same time, poisons the tissues and organs, injures the blood cells, and makes it harder for them to resist disease. It slows down the action of the brain and nerves, and

weakens the muscles and heart, and, strangely, instead of maintaining heat, actually reduces the temperature by driving the blood to the surface of the body. Other heat-giving foods, such as sugar, fats, etc., do not create any of these bad effects. That is why Professor Sutton classes alcohol as only a "third-rate food." In other words, **it is not a healthy food at all.**

4. **Is there any food in alcoholic liquors? —** **Spirits** contain practically nothing but water, alcohol, flavouring and colourings. They do not in any way nourish the body. **Wines** usually contain a small amount of sugar and other foods. But there is no comparison between wines and pure grape juices, as this simple diagram will show:



Other wines, after fermentation, have even less food value, and cannot be classed as foods any more than can lemonade.

5. **Beers contain hardly any food.** Beer used to be called liquid bread, and some people still think beer is nourishing, but, as a matter of fact, there is more

nourishment in a small bread roll than in a whole gallon of beer! To put it in another way—The body of an adult needs five and a half ounces of body-building food every day. A man would have to take sixty pints (seven and a half gallons) of beer a day to make up that amount of nourishment! So that, even if the alcohol present in the beer did no harm, it certainly would be a very expensive way of buying food. And of course this applies even more so in the case of wine. It will be seen that the claim, that alcoholic liquors of any kind have a food value, is not worth considering.

6. **Alcohol injures the cells of the body.** We have already explained how the body is made of millions of tiny cells (chapter II). In every cell is a mysterious and marvellous something called "protoplasm," or life-possessing substance. The more vital the cells, the more protoplasm they contain. For instance, brain cells contain more of it than do bone cells. Scientists have proved that these living cells are readily attacked by alcohol.

7. **Small doses of the drug,** though not enough at first to break down the cells, will temporarily "dull" them, but if these doses are regularly repeated they may in the end completely destroy them. It is chiefly because alcohol thus affects the body cells that it is classed by scientists as a poison. The late Dr. C. P. Stewart, who was Principal Medical Officer of the New South Wales Education Department, writing in "The School Magazine," said: "A man cannot keep his body in a state of good health if he poisons it with alcohol."

8. **Intoxicating drinks weaken the muscles.** Having no food value worth mentioning, and containing a poison to the body cells, it is to be expected that alcoholic drinks will not help people to do hard work. Every test scientists have made has shown that alcohol produces fatigue, rather than strength. Work is wastefully done, and mistakes in skilled work are more frequent. It is for this reason that athletes, as a rule, refrain from drinking liquors when training for and taking part in games and feats that call for endurance.

9. **Two famous examples of the benefits of abstinence:** One of the fine examples of work done by men who were not allowed alcoholic drinks took place in 1892, when five thousand skilled workmen changed two hundred miles of the Great Western Line in England, from seven feet to the ordinary four feet, eight and a half inches gauge, in thirty-one hours. Not a drop of alcoholic drink was allowed, and there was not a single accident. It was a great feat, and a splendid object lesson.

Sir Frederick Treves, the great English physician, who was with Field Marshal Lord Roberts in the South African war, and who accompanied the troops in the famous march to Ladysmith, said: "It was not the tall men, or the short men, the big men, or the little men who dropped out of the march, but the "drinkers," as plainly as if you had marked each of them on the back with a big 'D.'"

10. **What the muscles need to make them strong are:**

Pure water. Good food. Exercise and rest.

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11. **Growing children should never indulge in strong drink of any kind.** The growing cells of young people's bodies need the greatest of care. Drugs like alcohol have a very harmful effect upon them, and will hinder the proper development of the organs, muscles and mind. The way in which alcohol will affect the growth of seeds and young plants gives some idea of its effect upon growing young people.

12. **An interesting experiment.** If three lots of seed (e.g., of wheat) are set in glass tubes or bottles, and number one watered with pure water, number two with, say, ten drops of alcohol to ten ounces of water, and number three with one hundred drops of alcohol to ten ounces of water, it will be found that number one lot will come up and grow vigorously, number two lot will grow less quickly, while number three lot may fail to come up at all! In a similar way the alcohol contained in strong drink will affect the growth and development of young people. Moreover, the danger of setting up a craving for liquor is doubled in a young person.

13. **Be careful to take only wholesome food and drinks if you would grow strong and healthy in mind and body.**

XIV. Memorise Professor Harvey Sutton's description of alcohol.

Water seeds in bottles of soil as suggested—keep experiment before scholars for several weeks.

Refer to some local manual undertaking—need for strong muscles.

Explain a soldiers' route march.—Let scholars repeat the story of the march to Ladysmith, and the changing of the Great Western Line.

CHAPTER XV.

WHAT ALCOHOLIC LIQUORS WILL
NOT DO.

1. **Intoxicating liquors are not good thirst-quenchers.** They are rather the opposite. We were reminded in the chapter on "What to drink" (ch. v., par. 12), that water is the essential thirst-quencher. Alcohol is very greedy for water, and will quickly absorb it, and so prevent it from doing its thirst-quenching work. That is why it is often used as a dryer. Besides withholding the water from doing its work, the alcohol in strong drink irritates and inflames the linings of the mouth and stomach, in somewhat the same manner as does salt.

2. It will be seen then, that drinks containing alcohol are more likely to create than to quench thirst. It is well known among drinkers that one drink, instead of satisfying, usually creates a desire for more. Fruit drinks, such as orange or lemon squashes, milk, or, for those working in great heat, oatmeal water or barley water, are much more satisfying.

3. **Alcohol does not keep out the cold.** It is a peculiar fact that although alcohol burns up and creates heat in the body, on cold days the temperature

may go down below normal (98.4 degrees) when the drug is in the system. There is a reason for this. The tiny blood capillaries under the skin are controlled by delicate nerves and ring muscles. These relax when we are over-heated, allowing the excess heat to escape, but on cold days and when we are not exercising these little watchmen keep the blood back from the surface of the body. As soon as the alcohol in a drink is absorbed into the blood, it paralyses these ring muscles. This allows the blood to rush to the surface, and thus lose its heat as it comes in contact with the cold



POLAR
REGIONS

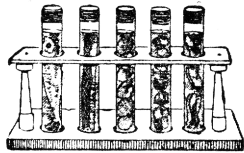
surface. At the same time it gives that false feeling of warmth or glow that deceives the drinker into thinking the liquor has made him warm, when actually he may be colder.

4. Doctor Nansen, Sir Douglas Mawson, Sir Edgeworth David, Sir Ernest Shackleton, Captain Scott and many other Arctic explorers have banned alcohol on their journeys rather than risk the lives of their parties. Lady Scott, speaking of her husband's wonderful expedition, wrote: "My husband regarded the use of spirits in the Antarctic as very dangerous, on account of the deadly cold that sets in after its use."

5. **Alcohol is not a stimulant, but a narcotic drug.** For a long time doctors thought that alcohol was a stimulant. In fact, liquors were commonly described as stimulants, suggesting that they would increase the power of the heart, or revive the tired system; but that

idea is no longer held by modern scientists. They class it as a narcotic drug. By a narcotic drug is meant, a chemical that will send to sleep or dull the nerves and brain cells. We shall have more to say about the seriousness of this drugging of alcohol when referring to its effects upon the brain, and upon skill and good conduct.

6. **Alcohol is not a good aid to digestion.** Digestion is, in a word, the dissolving of food in the body, but there is no wholesome food that alcohol will dissolve. Try the experiment yourself with different kinds of food soaked in alcohol. Methylated spirits will do for the purpose. Put some meat, cheese, raisins, sugar, etc., into separate small bottles and cover them with the spirit. Instead of the foods dissolving, they became, if anything, tougher! They will, as a matter of fact, keep in the spirits for years!



FOODS IN ALCOHOL

7. It is argued, sometimes, that the alcohol in drinks increases the flow of the digesting juices within the body. This is sometimes true, but scientists have discovered that these juices are weaker than when flowing normally; and it has been proved that, when alcohol is present with the food we swallow, such food takes longer to dissolve, notwithstanding the extra flow. Again we have to remember that the alcohol tends to inflame and injure the nerves and linings of the digestive organs and specially the liver. This irritation artificially increases appetite and leads to

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overeating, undue fatness, and flabbiness of muscles.

8. We have to take into account, also, the effects of alcohol on the brain, the blood and the other organs.

9. **Among heavy drinkers "hob-nailed" liver is a common complaint**, the name being given because that organ becomes "nobbly" all over, like the sole of a hob-nailed boot. A diseased liver always brings ill-health.

XV. Make a saturated solution of salt and water (i.e., add salt until no more will dissolve). Pour off the liquid and half fill two bottles. To one, add water—liquid becomes clearer; to the other, add alcohol—the mixture immediately whitens. The salt has gone back to dry crystals, showing that the alcohol has greedily taken away the water—hence it is not a thirst-quencher.

Put sugar, meat, cheese, vegetables, etc., in alcohol—toughens foods instead of softening or digesting. Sugar does not dissolve.

Soak dried bread crumbs in water (softened); in alcohol (hardened like brickbats).

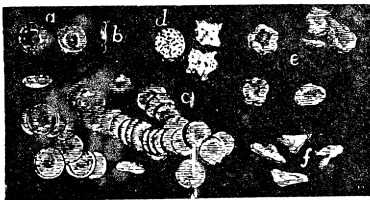
CHAPTER XVI.

GOOD HEALTH AND LONG LIFE

1. **How we value life!** When we are sick or injured no expense is spared to save us from dying. And if we should be in danger of fire, or of drowning, or of being lost in the bush, everything possible is done, regardless of cost and trouble, to help us to safety — all because life is valued above all other possessions.

Anything that may shorten life should, if possible, be avoided.

2. **To live long** we must live clean, healthy lives and keep our bodies fit by exercise and fresh air, and avoid injurious foods and drinks. We must keep free from accidents and needless strife, and have contented minds. We must be temperate in all things good, and avoid altogether those things that injure body and brain.



BLOOD CELLS (CORPUSCLES) AS SEEN THROUGH A MICROSCOPE

(a), (b) and (c) Red cells; (d) White cells; (e) Injured by alcohol; (f) Destroyed by alcohol

3. **The red and white cells of the blood lose their sprightliness when we drink alcohol.** It is upon the red discs, or cells, in the "river of life" that we depend to carry the oxygen from the lungs to

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the tissues throughout the body, and to carry away the poisonous gases to be breathed out; but alcohol makes them sluggish, and so their work is impaired.

4. **The little white "soldiers"** that protect the blood and tissues from disease germs are also very quickly affected by alcohol, and become very sleepy and inactive. Even a glass or two of drink is sufficient to make these little protectors of our health listless and inefficient in fighting their battles against disease.

5. It used to be thought that wine, particularly, was good for the blood (probably because it is red), but that has been proved wrong. Unfermented wine (grape juice) is often a good tonic for the blood of invalids.

6. **Drinking is a frequent cause of sickness and accidents.** Doctor W. A. Chapple (M.D. London), describes alcohol as "the friend of all diseases," and no wonder when we know just how it drugs the little white "soldiers" of the blood, and how it affects the other cells and tissues of the body. Their resistance to disease being lowered, ill health must more easily follow, whenever unfriendly germs attack us. Wounds and sores heal less readily and we are more likely to suffer from blood poisoning.

7. Because of the slowing down of their movements, and the lessening of their power to judge accurately, drinkers are also much more liable to accidents than abstainers. Statistics show that alcohol has been a contributing factor in a large proportion of motor and other accidents, not only because someone was drunk, but even because of their indulgence in just enough to

make them slow to decide and act in a moment of danger.

8. It is interesting to know that members of abstainers' lodges like the Rechabites and Sons of Temperance, recover from illness nearly twice as quickly as those belonging to the many non-abstainers' lodges, as this diagram shows:

Average weeks of sickness:

Abstainers' Societies average — 6.45 weeks.

Non-abstainers' Societies average — 10.91 weeks.

These figures are from Mr. H. Dillon Gouge, F.S.S., the public actuary of South Australia.

9. **Abstainers, on the average, live longer.** The records of big Insurance Societies and Lodges show also that, on the average, abstainers live longer than drinkers. Doctor Arthur Newsholme, of England, when writing on this subject, after very much study, said, "The chances are nearly two to one in favour of the abstainer living far longer and more healthfully than his non-abstaining friends."

10. People are often misled into thinking that because some drinkers live to a great age, alcohol cannot be as harmful as it is made out to be. Some men, because of good early training, and vigorous lives, have extra strong constitutions, and are naturally long lived. They have been hard manual workers and have, therefore, more easily thrown off the effects of alcohol

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than would the average person. But alcohol has not helped them to live long. They have done so in spite of it. Science has shown that had they never touched drink, they probably would have lived still longer. Where one drinker lives to a ripe old age, a score of other drinkers are carried away when quite young by sickness, or disease, or accident.

11. Here are a few of the many reasons why drinkers, though they may never be drunkards, are likely to live shorter lives than if they had been abstainers:

They more easily catch diseases, and find it harder to throw them off. Pneumonia, or inflammation of the lungs, is peculiarly fatal to young men apparently healthy, but heavy drinkers.

The heart is overworked, and often becomes fatty.

The liver and kidneys are not able to get rid of poisonous wastes so effectively while alcohol directly irritates them.

The arteries gradually become brittle, increasing the possibility of stroke.

The brain becomes slower in acting, increasing the chances of accidents.

12. **No organ of the body escapes from the effects of alcohol.** Whether it be the kidneys that purify the blood, or the liver that stores the sugar and provides bile for digestion, or the lungs by which we breathe, or that busy little pump, the heart, or any other organ within the body—each is liable to become diseased

by the excessive drinking of liquor, and may be affected by even moderate drinking, if it be continued over a period.

No organ of the body in a healthy condition is helped by alcohol.

13. **Good health generally is more assured by abstaining than by drinking.** It will be seen how important a part Temperance, in the sense of avoiding alcoholic liquors, has to do with the good health, and why so much space in this book has been devoted to this aspect of healthy living. **It pays to abstain.**

XVI. Tell the history of some rescue effort to save life.

Refer back to the functions of the red and white blood cells (chapter II) — alcohol drugs these.

Explain the purpose and principles of Life Insurance and Benefit Lodges and advantages in bonuses and benefits through healthy lives.

Sketch the diagram of the difference in sickness among abstainers and non-abstainers.

CHAPTER XVII.

WHEN DRINK ENTERS THE "TOP STORY"

"O God, that men should put an enemy in their mouths to steal away their brains." — Shakespeare.

1. **The most serious effect of alcohol is upon the brain.** We described the wonders of this most precious possession, the brain, in the chapter on "Our Bodies" (ch. II.). In studying the effect of alcohol upon brain cells we shall be helped considerably if we know how the brain grows.

2. **How the brain grows.** When we are little babies our brains, like our bodies, have not finished growing. Only the parts controlling the heart and the lungs have finished developing. Soon, however, those parts which control our muscles, or movements, grow rapidly and are almost completed by about the time we are seven. The parts to finish growing next are those with which we learn (knowledge centres). These grow fastest between seven and fourteen. Finally those parts which we call "self-control centres" (will-power and judgment), are developed as we are reaching manhood and womanhood.

3. **How alcohol affects the brain.** Of course, alcohol is carried by the blood to the brain. It takes only a few minutes to find its way there after being swallowed with a drink; and, strangely, it has a special liking for brain cells, and will soak into and drug them more

quickly than any other cells in the body. Another remarkable thing is that this drug, like ether and chloroform, attacks the groups of cells in just the opposite way to which they grew—that is, in this order:

1. Self-control, will-power and judgment.
2. Learning or knowledge centres.
3. Muscle or motion centres.
4. Lung or breathing centres.
5. Heart and blood circulation centres.

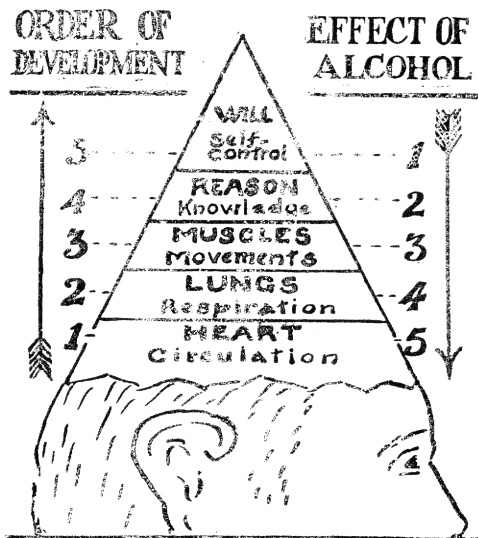


DIAGRAM SHOWING THE ORDER OF DEVELOPMENT OF THE HUMAN BRAIN, AND THE OPPOSITE ORDER OF THE EFFECT OF ALCOHOL UPON THE BRAIN CELLS

The diagram shown will, perhaps, help you to understand this better. What we need to notice particularly

is that self-control (the top story) is affected first.

4. **Even a small quantity of drink has an effect on the brain and nerves.** The taking of alcoholic drink never helps mental power. Doctors have made many tests upon typists, printers, signallers and others who have been given small quantities of alcohol. They have been found to be slower and more liable to make mistakes when working under its influence, than when working without it, though they thought, when under the alcohol, that they were doing better work!

5. **The same applies to persons playing games** like cricket and tennis, or to anybody who needs to act quickly and accurately. Even a little drop of alcohol (not enough to make a person drunk) will drug the self-control cells. That is why those who take drink easily become excited, angry or talkative. They are losing control of themselves.

6. **Safety demands that we should be sober.** When the brain cells are drugged with alcohol they cannot act quickly. Thus it is not safe for anyone, after taking alcohol, to drive a car, especially in a crowded street, because, when approaching danger, the brain cannot act as quickly as it should when deciding what is best to do. A fraction of a second may make all the difference between safety and a very serious accident. Sir Lauder Brunton, who has written many text books for University medical students, says, "Alcohol paralyses the judgment, and that paralysis begins with the first glass." It is the last five words that every young man and woman should specially remember. Every English schoolboy and schoolgirl is

now being taught this fact, and that **it is safest and best not to touch alcohol at all.**

7. **Alcoholic poisoning results from excessive drinking.** Taking large quantities of alcohol is always very harmful. By drinking several glasses of liquor a man usually becomes drunk, that is, his reasoning (knowledge centres) and muscles (motion centres), as well as the "top storey" (self-control) become drugged or poisoned. The drinker then talks stupidly, slurring his words, staggers about, and may be sullen or quarrelsome. This is because the "telephone exchange" is all out of order, and cannot receive and send or control messages. If a very large amount of alcohol is taken, the lung and heart centres of the brain are also affected, ending sometimes in death—called alcoholic poisoning.

8. **Never forget that alcohol is a habit-forming drug.** We mean by a habit-forming drug—a chemical which, when taken regularly, creates such a craving that it becomes very hard to discontinue the habit. We naturally crave for food when hungry; but, when we have had enough we are satisfied. Not so with drugs. They make their victims want to take more and more. Drugs also weaken the will power, so that one cannot say No to them. Cocaine, morphia, atropine, opium, heroin, and ALCOHOL are all habit-forming drugs.

9. We put alcohol in capital letters because it is one of the most subtle and dangerous as well as the most universal of all habit-forming drugs. It is not as quick-acting as some of the others, but it is more deceptive. Once the alcohol habit is acquired, it is

very hard to shake off, and the worst of it is, its victims seldom realise it is getting a hold on them until it is **too late!**

10. **The drug, alcohol, weakens self-control.** As was explained in the lesson on Alcohol and the Brain in the previous chapter, this drug attacks the self-control part of the brain first, thus weakening our will power and judgment, which should help us to say No when we are going too far in the presence of temptation. Even one glass of drink may affect self-control, putting our brakes partly out of action, as it were. And as each further drink is taken, so many more of these control cells are weakened.

11. **The danger signals (or nerves) are sent to sleep.** Drugs like alcohol are called narcotics. They send to sleep the danger signals that should warn us of trouble in the body. The tissues so affected can then be inflamed or hurt without our knowing it!

12. **The craving often grows until self-respect is lost.** When the effect of the dose of alcohol goes off, there is set up a sinking feeling or craving. The nerves are waking to tell us the tissues are inflamed and injured. This causes the drinker to want more of the drug to send his nerves to sleep; and so the alcohol drug-habit grows—until he becomes a wreck, losing all self-respect.

XVII. Sketch the diagram of the order of the development of the brain, and the inverse effect of alcohol.

Give an emphatic warning regarding the dangers of drugs.

Pour alcohol (methylated spirits will do) on the white of an egg (albumen of the egg is similar to brain) — immediate coagulation shows, crudely, the effect on the brain.

Describe a drink-caused accident.— Brain failed to act quickly enough (e.g. the driver stepped on the accelerator instead of applying the brake).

Memorise the quotations from Shakespeare and Mackay (beginning and end of this chapter).

CHAPTER XVIII.

"WE MUST PLAY THE GAME."

1. **The quality of manliness and womanliness.** "Only very ignorant persons now think that drinking alcohol is a manly habit." It was the late Dr. C. P. Stewart, as Principal Medical Officer of the Education Department, who used these very forceful words in the New South Wales School Magazine. It should ever be our ambition to be manly and womanly in our habits and conduct and to avoid those things that prevent us from playing the game on the field, in society, and for the country to which we belong.

ON THE FIELD

2. **The three essentials in sport.** It is grand to feel fit, and to excel in games, but a good sport needs three important qualities:

- (1) **Stamina.**—The will and strength to endure.
- (2) **Alertness.**—Skill and ability to decide instantly what to do, to do it accurately, and to do it at the right moment.
- (3) **Temper.**—Keeping cool in the game—consideration for others—good team work.

If a sportsman takes alcohol he may soon begin to lose all three of these.

3. **“Last to come, first to go.”** We have already learned that alcohol causes the muscles to tire quickly, and, in the lesson on Alcohol and the Brain (ch. xvii.), we learned that the will power (or self-control) centres, the last to be developed, are the first to be attacked. It is not surprising then, that a sportsman’s endurance, or stamina, and his will to persevere are weakened if he is foolish enough to take strong drink.

4. **Alcohol, being a drug, affects skill.** In every kind of sport we must have good judgment, accurate movements, and, in many games, speed in decision and action. But drugged brain cells can act neither quickly nor accurately. Quite a small quantity of alcohol is enough to slow down the delicate controls and produce faults, resulting often in serious losses of points against an opponent in a game or contest.

5. **Drink spoils sport and good fellowship.** Nothing spoils a good contest or game more quickly than ill-feeling, brought about by cheating, taking advantage of an opponent, or someone losing his temper. Intoxicating drink tends to make a player aggressive, inconsiderate, suspicious and ill-tempered; because the self-control centres of the brain are drugged. This leads to brawling, fighting, enmity, and spoils the good fellowship that should always exist between contestants. Our greatest and most valuable qualities, judgment, control, commonsense, and consideration for others are first to be lost!

6. **The majority of great athletes and record-breaking sportsmen take little or no liquor.** Occasion-

ally we may find a champion who drinks in moderation,



SIR HUBERT OPPERMAN,
An Australian
world champion cyclist

but even he will avoid alcohol as he prepares for, and enters a great contest. Not one great athlete, however, who has become a drinker has remained at the top of the tree!

7. Most of the outstanding sportsmen and sportswomen and athletes have been total abstainers. Here are just a few:

Cricket.—Dr. W. G. Grace, Victor Trumper, Jack Hobbs, Sir Donald Bradman.

Cycling.—Sir Hubert Opperman.

Billiards.—Walter Lindrum.

Polo Players.—The Ross Brothers.

Tennis.—Ken Rosewall, Lew Hoad, Frank Sedgman.

Swimming.—Murray Rose, John Konrads.

Athletics.—Betty Cuthbert, Shirley Strickland, Fleur Mellor.

Rowing.—Stuart Mackenzie.

All of these and many others tell that Total Abstinence is necessary to reach the top.

IN SOCIETY

8. **Keep self on the throne.** More important than skill in games, and general good health, is character or moral power — that God-given quality that assures us of a good name, and the respect and esteem of our fellows, and that brings success in the best sense of the word. Because alcohol first attacks self-control, the basis of our moral power, there is always the danger of losing some of that power when we drink.

9. **By abstaining, we are less likely to give way to temptations** and are more likely to retain that free will and temperance in conduct that enrich character and make us worthy citizens. In other words, we keep self on the throne. On the other hand, should we indulge in liquor, we may some day find self dethroned and alcohol master, and our lives given up to excessive drinking.

10. **Many evils follow excessive drinking.** Carelessness, neglect, waste, poverty, gluttony, riotous behaviour and crime are all aided by alcohol. Many of the prisoners in our jails have been sent there by drink. Often the little neglected children in our charitable homes have careless, drinking parents. Thousands of well-to-do people have come to poverty through acquiring the liquor habit; while many street brawls and much riotous conduct are associated with excessive drinking.

11. There is just one simple explanation for all this.—Alcohol is a drug, that dulls and finally kills the self-control centres of the brain, and unruly or careless conduct naturally follows.

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12. **Young people should beware of the social glass** and avoid the wines and other intoxicating drinks offered at social gatherings. Good humour and joviality can so easily be turned into vulgarity by even one glass. **When the drink is in, the wit is out!**

13. **A very little liquor indeed is sufficient** to loosen the tongue, and to take away that natural reserve and modesty which are so much to be prized, and to cause one to yield to temptations that may ruin the character and bring bitter remorse for life. **Abstinence is the only really safe course.**

14. **There are plenty of wholesome and enjoyable drinks** to be had these days without endangering the health and the happiness of ourselves and others by alcoholic drinking.

FOR OUR COUNTRY

15. **National greatness depends much upon sobriety.** Just as in Hygiene the health of our towns and our country, as well as our personal well-being, have to be considered, so in Temperance do we need to remember that there is a national aspect.

16. **Probably nothing has done more harm to the nation than intemperance.** The loss of work, the crime, and the insanity that result from drinking, all cost the people much in taxes, besides the waste of the money spent unnecessarily in drink; for the revenue obtained from liquor can never make up for these. Said the great statesman, Gladstone, "Give me a sober people not wasting their money on drink, and I will find all

the revenue I need to run the country.”

For our nation's sake we should seek always to be sober, self-reliant, healthy citizens.

Girls, boys with firm, strong muscles,
Lungs sound as any bell,
Stand at attention! Answer,
Are your virtues strong as well?
If God, when looking at you,
Sees you are good and true,
The ranks are not o'ercrowded,
He'll find a place for you.

*

XVIII. Emphasise the esteem in which a person, temperate in conduct, is held in society.

Enlarge upon (1) the strain on muscle and mind in a Test match or contest, (2) need for instant decisions, (3) need for giving and taking in the game.

Contrast unseemly conduct of drinking parties with pleasurable (and jolly) functions without liquor.

Do God's good gifts bring sorrow and disgrace?

The nation's current drink bill may be compared with the cost of education, etc.

* By Mrs. H. A. Bevan.



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